From: John Beutler
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To: myriad-mayo_2014
Subject: Draft Guidance - comment

I am a natural product chemist working for the US National Cancer Institute in drug discovery and development. I would like to object to the sweeping interpretation by the PTO of the recent SCOTUS decisions in Mayo and Myriad. The cases under consideration relate to natural oligonucleotides such as DNA and their used in unmodified form. The draft guidance applies their reasoning to all products of nature, including small molecules produced by any organism.

I submit first that the patenting of compositions of matter is essential to drug development, and doubly so for natural products. This provides protection for the substantial chemical research involved in finding a lead series. Without patents, many naturally occurring substances would likely not have been pursued for drug use by the pharmaceutical industry. In my field of cancer drug discovery from natural sources, there are abundant examples to cite, such as vincristine, vinblastine, yondelis, daunomycin, and mitomycin C. Similarly, in the antibiotic field, there are numerous examples. There are also many more examples under clinical development. The proposed guidance would undercut current projects in the preclinical pipeline.

Secondly, the fact is that small natural product molecules are only produced by a very limited set of organisms, thus high throughput screening campaigns are required to identify the few needles in the haystack of possible organisms. Of the hundreds of thousands of plant species, only one produces vincristine! The complex biosynthetic machinery required to produce these compounds has evolved from the basic primary metabolic pathways that govern energy, structure, and replication.

A better course than the proposed guidance would be to limit the scope to **primary** metabolites such as proteins, lipids, amino acids, nucleic acids and others, leaving the rare and valuable **secondary** metabolites to be discovered and patented. The eventual impact on human health of the guidance as written will be extremely negative. It is conceivable that court decisions will eventually limit the PTO interpretation, but even if that happens, a great deal of damage will have been done.

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This comment was prepared or accomplished by John A. Beutler in his personal capacity. The opinions expressed in this article are the author's own and do not reflect the view of the National Institutes of Health, the Department of Health and Human Services, or the United States government.

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